

**CLAIMS:**

1. An electronic circuit unit for use in an electronic equipment cabinet, said electronic circuit unit comprising:
  - 5       a. first and second opposite main walls including EMI absorbing material;
  - b. a motherboard frame between said main walls, said motherboard frame including a plurality of wall segments defining a polygon, said  
10       motherboard frame including EMI absorbing material;
  - c. first and second locating retainers on said motherboard frame;
  - d. a signal-processing module forming at least a  
15       portion of said first main wall, said signal-processing module being removably mounted to said motherboard frame;
  - e. a generally planar motherboard in said motherboard frame fastened to said motherboard  
20       frame by said first locating retainer, said first locating retainer being positioned on said motherboard frame to locate said motherboard between said main walls;
  - f. said signal-processing module being fastened to  
25       said motherboard frame by said second locating retainer;
  - g. at least one electrical connector including first and second mating parts, said first mating part being on said motherboard, said second  
30       mating part being on said signal-processing module;
  - h. said first and said second locating retainers being positioned relative to one another to

allow said first and said second mating parts to align and mate when said signal-processing module is fastened to said motherboard frame.

- 5        2. An electronic circuit unit as defined in claim 1,  
         wherein said polygon is a rectangle.
3. An electronic circuit unit as defined in claim 2,  
         wherein said electrical connector is a first  
10        electrical connector, one of said wall segments  
         including a passage for receiving a second electrical  
         connector.
4. An electronic circuit unit as defined in claim 3,  
15        wherein said motherboard frame includes a guide for  
         locating said electronic circuit unit in a certain  
         position in the electronic equipment cabinet when  
         mounted therein.
- 20        5. An electronic circuit unit as defined in claim 4,  
         wherein said guide includes a plurality of grooves  
         formed on wall segments of said motherboard frame  
         that are opposite one another.
- 25        6. An electronic circuit unit as defined in claim 4,  
         wherein said first main wall includes a heat sink.
7. An electronic circuit unit as defined in claim 6,  
         wherein said second main wall includes a heat sink.
- 30        8. An electronic circuit unit as defined in claim 7,  
         wherein said first main wall includes a plurality of  
         signal processing modules.

9. An electronic circuit unit as defined in claim 8, wherein said plurality of signal processing modules process optical signals.

5 10. An electronic circuit unit as defined in claim 7, comprising a thermal coupling between said signal processing module and said second main wall, said thermal coupling transferring thermal energy from said signal processing module to said second main  
10 wall.

11. An electronic circuit unit as defined in claim 10, wherein said motherboard has a passage through which said thermal coupling is realized.

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12. An electronic circuit unit as defined in claim 1, wherein said motherboard frame is integrally formed of metallic material.

20 13. An electronic circuit unit as defined in claim 2, including a third locating retainer, said second main wall being mounted to said motherboard frame by said third locating retainer.

25 14. A motherboard frame for an electronic circuit unit, comprising:

- 30 a. a plurality of wall segments including EMI absorbing material and arranged in a plane of reference, said wall segments circumscribing a void area, said void area having first and second opposite open sides;
- b. first, second and third locating devices on at least some of said plurality of wall segments;

c. said first, second and third locating devices being spaced from one another in a direction that is transverse to said plane of reference;

d. said first locating device being capable to receive a planar motherboard and place said motherboard in said motherboard plane and generally parallel to the plane of reference and in a predetermined position between said second and third locating devices.

15. A motherboard frame as defined in claim 14, wherein said motherboard frame is integrally formed of metallic material.

16. A motherboard as defined in claim 15, wherein one of said wall segments includes a passage for receiving an electrical connector.

17. In combination:

a. a motherboard frame for an electronic circuit unit, comprising:

i. a plurality of wall segments including EMI absorbing material and arranged in a plane of reference, said wall segments circumscribing a void area, said void area having first and second opposite open sides;

ii. first, second and third locating devices on at least some of said plurality of wall segments;

iii. said first, second and third locating devices being spaced from one another in a direction that is transverse to said plane of reference;

- b. a planar motherboard having an outline generally corresponding to an outline of said void area to allow said motherboard to be mounted in said motherboard frame;
- 5 c. said first locating device being capable to receive said planar motherboard and place said motherboard parallel to the plane of reference and in a predetermined position between said second and third locating devices;
- 10 d. said second locating device and the outline of said motherboard having respective geometrical configurations such that the motherboard can be inserted in said motherboard frame from one of said open sides without interference from said
- 15 second locating device.
18. A combination as defined in claim 17, wherein said motherboard frame is generally rectangular.
- 20 19. A combination as defined in claim 18, wherein one of said wall segments includes a passage for receiving an electrical connector.
- 25 20. A combination as defined in claim 19, wherein said motherboard frame is integrally formed of metallic material.
- 30 21. A combination as defined in claim 20 wherein said first locating device includes a rib on said motherboard frame projecting inwardly in said void area.